

## **REMARKS**

Claims 1-2, 5-6, 8, 10, 12, 14-16, 20-21, 23, 25, 27, 29 and 38-39 are pending and under active prosecution. Claims 30-35 and 40 are previously withdrawn as directed to nonelected subject matter, but are subject to rejoinder.

Reconsideration of the present application, as amended, is respectfully requested. Applicants express their appreciation for the courtesy of the exchange of telephone messages with the Examiner, conducted on December 8, 2010, with Applicants' undersigned representative. The Examiner confirmed that those pending claims not rejected under 35 U.S.C. § 103(a) are considered by the Examiner to be allowable.

### **A. AMENDMENTS TO THE CLAIMS**

The claims are amended to more particularly set forth that which Applicants consider to be their invention. Independent claim 1 is amended to include the elements of claim 13. Independent claim 16 is amended to include the elements of claim 28. Claims 2, 7, 9, 11, 13, 17, 22, 24, 26 and 28 are newly cancelled, without prejudice. Withdrawn claims 30, 33 and 35 are amended in conformity with independent claim 16, by copying elements from withdrawn dependent claims 33 and 35, in order to put all of the withdrawn claims into condition for examination and allowance, should the pending claims be determined to be in condition for allowance. The pending dependent claims are conformed to the amended independent claims, as appropriate.

No new matter is added.

### **B. REJECTION UNDER 35 U.S.C. § 103(a)**

The Examiner has made a new rejection of claims 1, 2, 5-6, 16-17, 20-21, 38 and 39 under 35 U.S.C. 103(a) as allegedly unpatentable over Saito et al. ("Saito," US Patent 5,731,172), in view of Encke (Journal of Immunology 1998, Vol. 161, p. 4917-4923) Choo (PNAS, 1994, Vol. 91, p. 1294-1298) and Large (Journal of Immunology, 1999, Vol. 162, p. 931-938).

Saito is cited as before, as teaching a recombinant adenovirus vaccine comprising plasmids that express HCV genes (citing to Example 2). The Examiner concedes that Saito does not specifically disclose which HCV genes are expressed by the recombinant adenovirus, but the

Examiner argues that "since Saito broadly speaks about the whole HCV genome, it is expected that all HCV genes, including E1, E2, NS3, NS4, and NS5 are present in Saito's recombinant adenoviral vaccine."

Encke is cited to remedy this deficiency by teaching a "DNA vaccine composition comprising plasmids encoding NS3, NS4, and NS5 genes of HCV" (citing to the Materials and Methods). Choo is then cited as teaching a "vaccine composition comprising plasmids encoding E1 and E2 genes of HCV" (citing to the Materials and Methods).

The Examiner also argues that, "the size of the particular genes comprised within the vaccine disclosed by Encke is expected to range from 2 to 4 kb, because the HCV genes of the current invention and HCV genes disclosed by Encke have identical structure.

The Examiner argues that Large teaches that the N-terminal half of the HCV core protein has immunosuppressive properties. Therefore, the Examiner concludes that it would have been obvious to eliminate 35-40 residues of the N-terminal region.

Applicants respectfully disagree. In order to sustain a rejection as *prima facie* obvious, the facts must show that the elements of the rejected claim(s) are present or suggested, *e.g.*, by one or more references. The claimed invention must be viewed as a whole. *See* generally MPEP §§ 2141 and 2142. Here, it is urged that the primary reference(s), taken in any combination with the secondary reference, would have failed to teach or suggest the invention of claim 1, *et seq.* to the ordinary artisan.

The Examiner's attention is respectfully directed to independent claims 1 and 16 (and independent withdrawn claim 30). Each of these claims now includes elements of claims 13 and/or 28, respectively. As confirmed by the Examiner in the above-noted telephone interview, claims 13 and 28 were not included in the instant rejection made under 35 U.S.C. 103(a). Thus, it is submitted that all of the pending claims are now free of the cited art and in condition for allowance.

As explained in the previous Response (dated October 16, 2009 and incorporated by reference herein in its entirety), Saito fails to teach or suggest the claimed invention. Example 2 of Saito discloses the recombinant adenovirus bearing cDNA (nucleotide number: 307-2554) of HCV. The nucleotide number 307-2554 herein corresponds to Core and E1 and E2 of HCV, respectively. Accordingly, Saito only mentions the first plasmid of the present invention, and fails to disclose the second and third plasmids. Thus, the Saito construct contains only core, E1,

and E2, and does not contain NS3, NS4, and NS5 which comprise the second and third plasmids, respectively, as required by claim 1 of the present invention. In addition, Saito deletes E1, in whole or in part (Col. 4, lines 36-40; Col. 5, lines 59-61). Thus, two of the three plasmids of the present invention are not taught by Saito. Furthermore, the core described by Saito does not require the elimination of a 35-40 amino acids from the core N-terminal region.

Encke fails to remedy the clear shortcomings of Saito. Encke only discloses that NS3, NS4 and NS5, which are the nonstructural proteins of HCV, induce sufficient immunity from a mouse model. NS3, NS4 and NS5 of claim 1 are present, according to Encke, on three separate types of plasmids. Encke is also silent as to the first plasmid of claim 1. Furthermore, by explaining that NS3, NS4 and NS5 exist on the separate plasmids, respectively, Encke fails to disclose the second plasmid of claim 1, containing NS3 and NS4.

Furthermore, Encke also fails to mention the removal of 35-40 amino acid from the terminal end of the core and the resultant effects.

Choo fails to remedy the clear deficiencies of Saito and Encke, taken in any combination. Choo has been referenced in detail in the specification of the present invention, and it relates to a vaccine utilizing E1 and E2 which are the envelope proteins of HCB. Choo does not disclose any of the first, second and third plasmids of the present invention. Furthermore, Choo fails to disclose the removal of 35-40 amino acid residues from the terminal end of the core. Further still, since Choo only demonstrates the preventive effect provided by injection of homologs, it is unpredictable from Choo and/or any other reference of record, whether the same effect would have been shown by injection of a heterologous vaccine. Furthermore, cell mediated immunity is not induced. Since only a small amount of infective agent (10 CID50) is used, it is also unpredictable whether the same effect would have been obtained with a larger amount of infective agent.

Large fails to remedy the clear deficiencies of Saito, Encke and/or Choo. Large has also been referenced in the specification of the present invention, and describes the inhibition of immunity by the Core protein of HCV. Large discloses that the death rate increases as the non-structural proteins, including Core, E1, E2, p7, NS2, NS3 (and particularly Core among these) inhibits immunity. However, Large does not disclose any of the first, second and third plasmids of the present invention. Furthermore, even if Large would have suggested to remove the inhibition of immunity, by removing N-terminal amino acid residues, it is submitted that Large

fails to provide any data regarding the HCV core protein N-terminal with residues removed from the N-terminal. Accordingly, it is respectfully urged that Large fails to disclose or suggest specifically which amino acid should be removed from the N-terminal, and what effect may be obtained as a result.

Thus, it is respectfully submitted that Saito, Encke, Choo and/or Large, taken in any combination, would have failed to teach or suggest the invention of claim 1, et seq., "wherein the first plasmid contains SEQ ID No 50, the second plasmid contains SEQ ID No 51, and the third plasmid contains SEQ ID No 52." Further, it is respectfully submitted that Saito, Encke, Choo and/or Large, taken in any combination, would have failed to teach or suggest the invention of claim 16, et seq., "wherein the first adenovirus contains SEQ ID No 50, the second adenovirus contains SEQ ID No 54, and the third adenovirus contains SEQ ID No 52."

For all of these reasons, reconsideration and withdrawal of these grounds of rejection is respectfully requested.

**C. CONCLUSION**

It is respectfully submitted that application is in condition for allowance, and reconsideration and allowance is hereby requested. If any questions remain, the Examiner is respectfully requested to contact the undersigned for a telephone interview, in the interest of expeditious prosecution.

**D. FEES**

No fees are believed to be owed for entry of this Response. Nevertheless, if it is determined that any further fees are due or any overpayment has been made, the Assistant Commissioner is hereby authorized to debit or credit such sum to deposit account 02-2275.

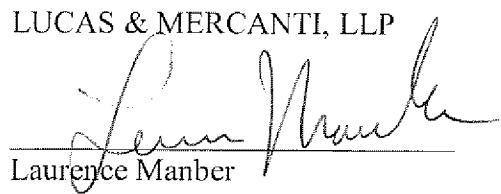
Pursuant to 37 C.F.R. 1.136(a)(3), please treat this and any concurrent or future reply in this application that requires a petition for an extension of time for its timely submission as incorporating a petition for extension of time for the appropriate length of time. The fee associated therewith is to be charged to Deposit Account No. 02-2275.

Should any additional fees or extensions of time be necessary in order to maintain this Application in pending condition, appropriate requests are hereby made and authorization is given to debit account # 02-2275.

An early and favorable action on the merits is earnestly solicited. The Examiner is respectfully invited to telephone the undersigned should any questions remain.

Respectfully submitted,

LUCAS & MERCANTI, LLP

  
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Laurence Manber  
Reg. No. 35,597

LUCAS & MERCANTI, LLP  
475 Park Avenue South  
New York, New York 10016  
Phone: 212-661-8000  
Fax: 212-661-8002